

A photograph of an industrial facility, likely a refinery or chemical plant, featuring several tall smokestacks and complex piping structures. The facility is situated behind a line of trees and a body of water. The sky is clear and blue.

The Role of 'Edutainment' in Education for Sustainable Development

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Presentation contents

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Literature Context

- Games promote new ways of learning and thinking, which is considered vital within ESD (HEFCE: 2013).
- Games engage and motivate students who no longer find traditional approaches engaging (Cheong et. al.: 2014; Nagel et. al.: 2014)
- Games are valuable as tools to generate positive effects on learning (Annetta et. al.: 2009; Katsaliaki and Mustafee: 2015)
- Games provide valuable learning environments for ESD as they engage players in cognitively demanding tasks that require problem-solving and decision-making skills (Fabricatore and Lopez: 2012)
- Students are Net'geners who exhibit different learning characteristics and preference for collaborative experiential activities (Raines: 2002)
- Contextualised activities within games generate experiential learning that can motivate players to engage in rethinking the game strategy (Gee: 2007; Baytak and Land: 2011)



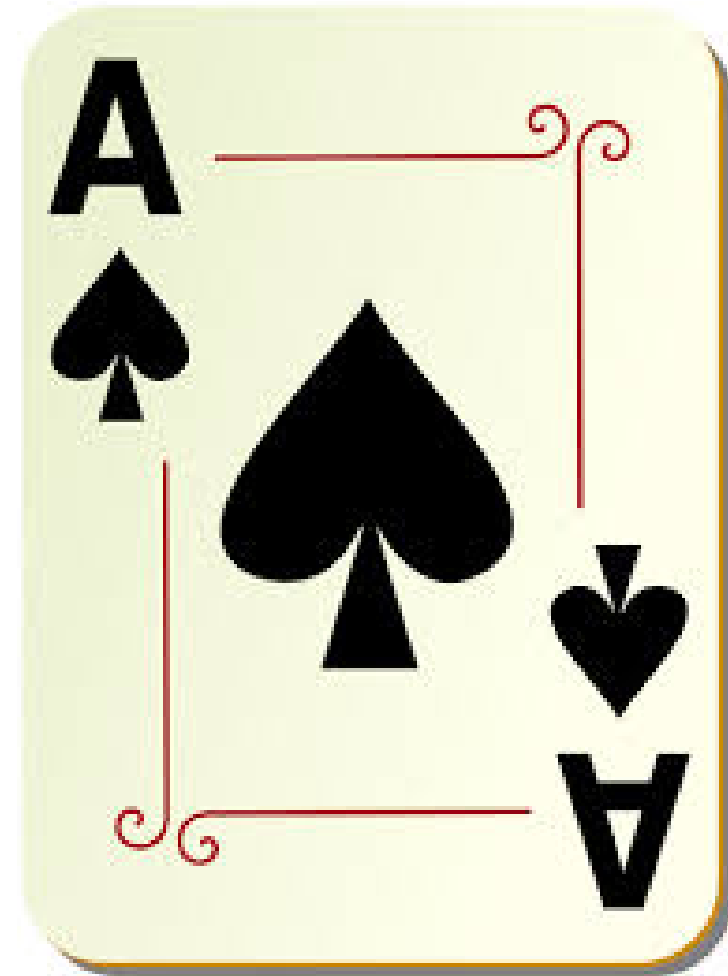
Module Context

- Sustainable Strategies Game played with Level 5 & 6 students
- > 50 students played S2 2015-16
- Students enjoy playing SSG
 - ✓ Round 1 - *"I like this game"*
 - ✓ Round 5 - Players are responding with *"competition and greed"*
- But it could be so much better...



Sustainable Strategies Game (SSG)

- Groups act as manufacturing companies based around a lake
 - ✓ Production utilises lake water
 - ✓ Profits depend on quality of water
- Game tasks groups to maximise profits whilst considering
 - ✓ Prudent use of natural resources
 - ✓ Protection of the environment
 - ✓ Social impact
- SSG is played over a series of rounds in which students define their business strategy
 - ✓ Pay off from each round = money earned and change to water quality



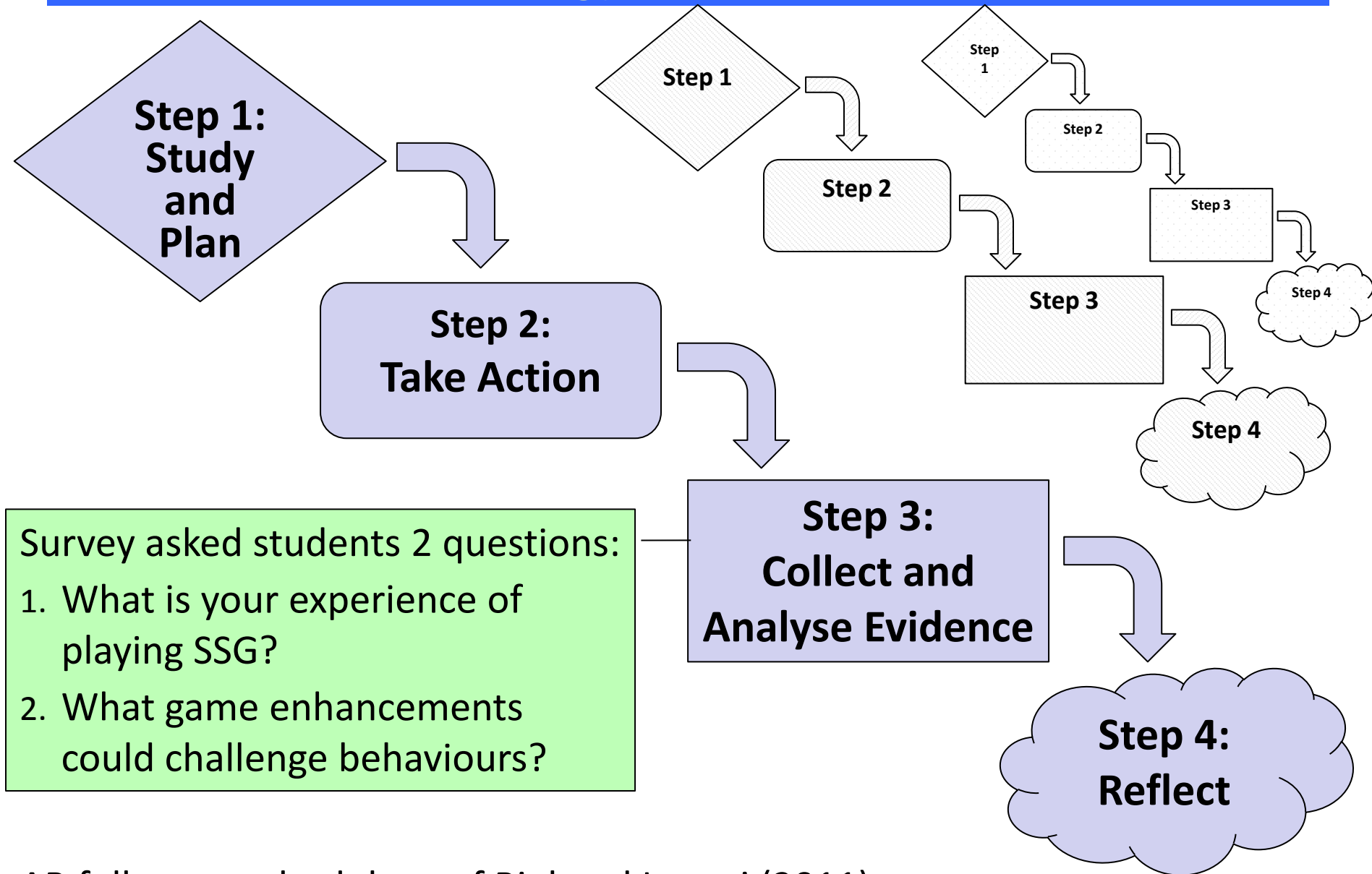


Facilitator Reflection

- SSG needs to be developed:
 - ✓ Collaboration as an strategic option
 - ✓ Consideration of impacts of chosen strategy e.g. environment, local community
 - ✓ Challenge players' thinking for sustainability
- Student feedback required
 - Q1: Experience of playing SSG
 - Q2: How it could be enhanced to challenge their thinking

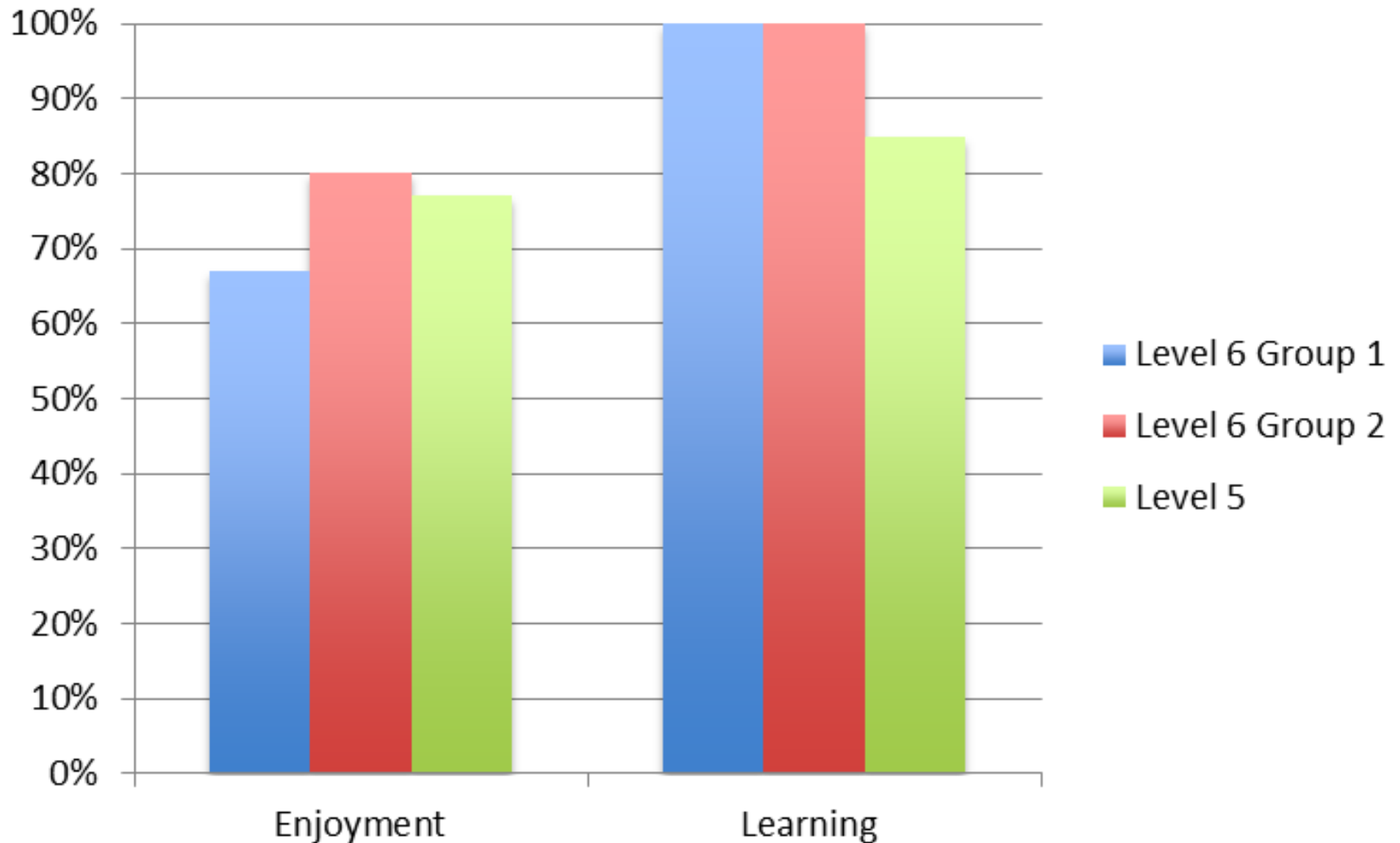


Methodology: Action Research



AR follows methodology of Riel and Lepori (2011)

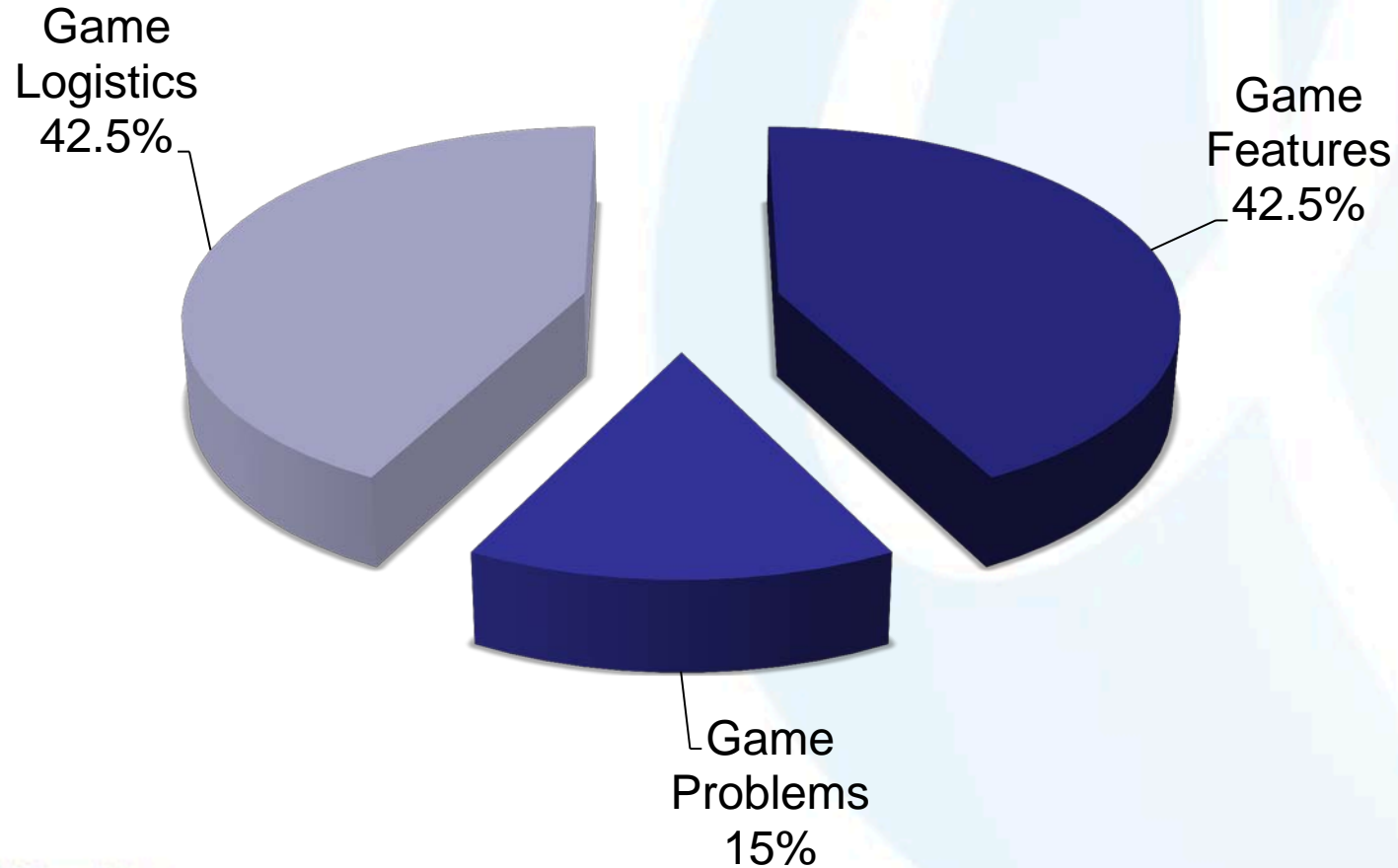
Q1: Research Findings: 'Edutainment' Value



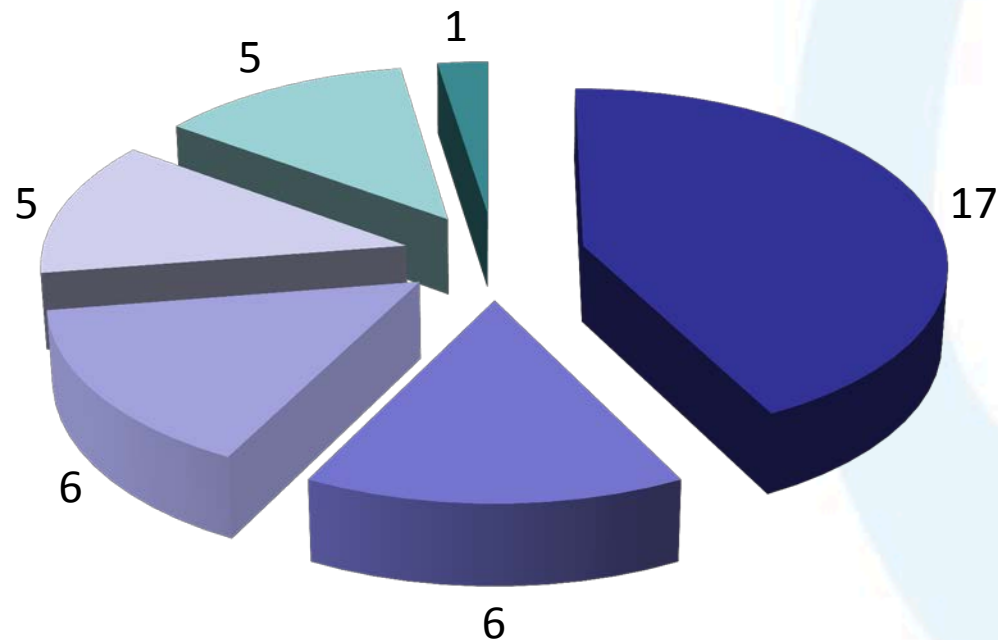
Research Findings

- *“Great experience. It showed how businesses in real life act when rewards are being given for not being sustainable.”*
- *“Eye-opener, enjoyable, educational.”*
- *“I found it really helpful and challenging.”*
- *“A good use of how sustainability is implemented within business operations. Fun way to understand it.”*
- *“The experience I found by playing the game was highly educating. I learned new things by enjoying a team game.”*
- *“It was fun and challenging.”*

Q2: Research Findings - Potential Interventions



Q2: Research Findings - New Game Features?



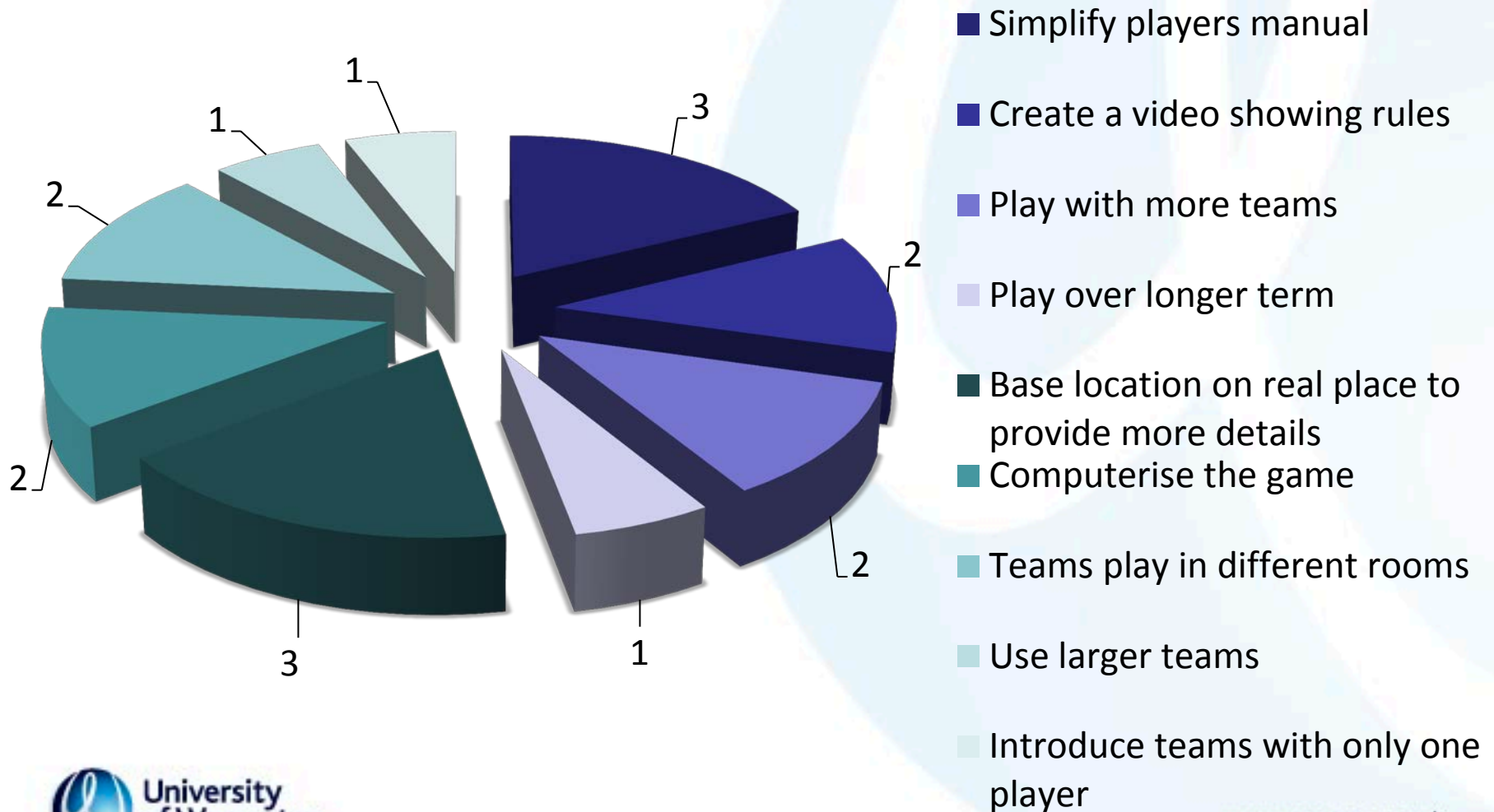
- Modifications to the Reward System
- Intervention cards to drive collaboration
- Introduce a method to change water quality more frequently
- Introduce additional strategic game-play options
- Prevent partnerships or secret collaborations
- Increase the risk a polluter is fined



Findings Evaluation: Game Features

Game Feature	Ease of implementation	Cost of development	Likelihood of challenging behaviours	Total score
Intervention cards to drive collaboration	3	4	4	48
Introduce additional strategic game-play options	3	4	3	36
Modifications to Reward System	2	5	3	30
Increase the risk a polluter is fined	3	5	2	30
Introduce a method to change water quality more frequently	2	4	2	16
Prevent partnerships or secret collaborations	1	5	2	10

Q2: Research Findings - New Game Logistics?

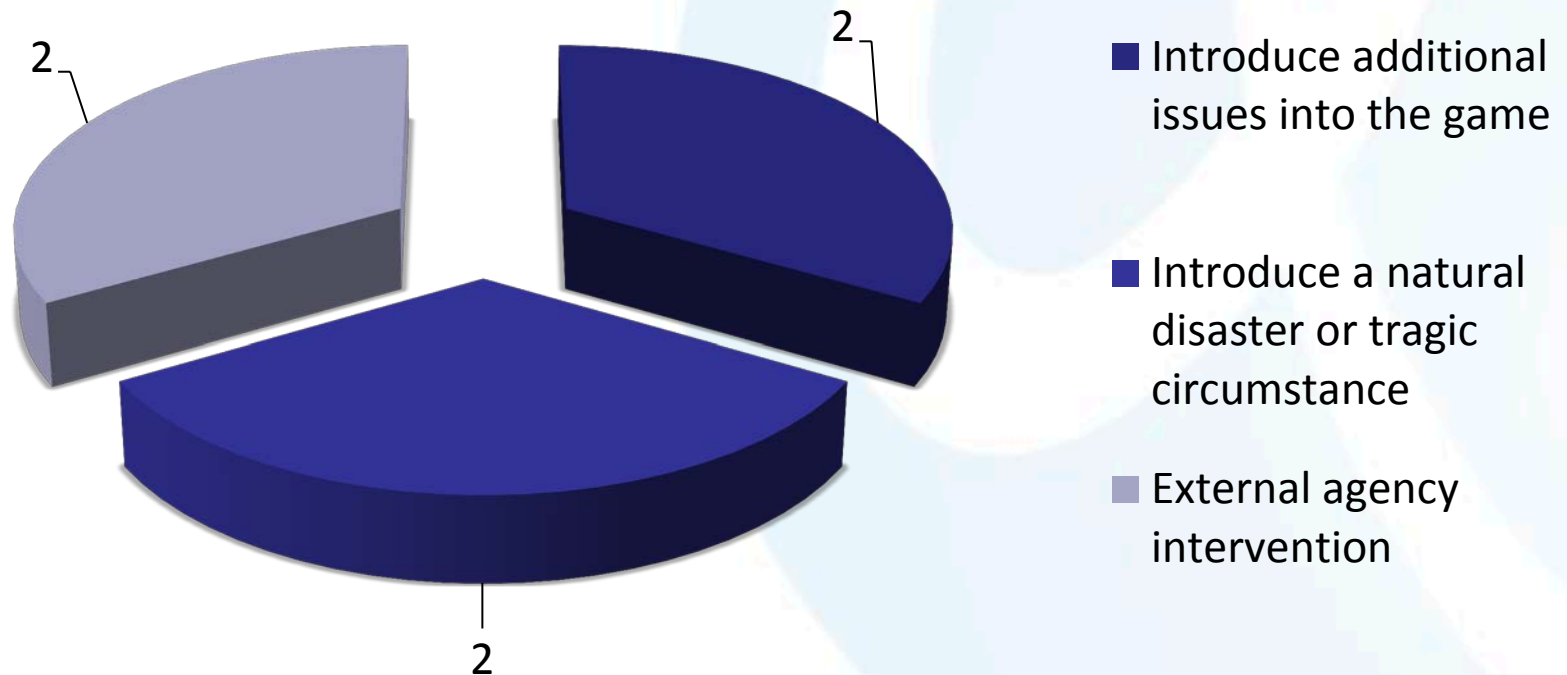




Findings Evaluation: Game Logistics

Game Feature	Ease of implementation	Cost of development	Likelihood of challenging behaviours	Total score
Provide more background information	4	4	2	32
Rearrange team structure	3	4	2	24
Play online	2	2	4	16
Make the game more anonymous	2	4	2	16
Simplify game rules	1	4	3	12
Extend the game	3	3	1	9
Reduce the length of the game	1	4	2	8

Q2: Research Findings - New Game Problems?



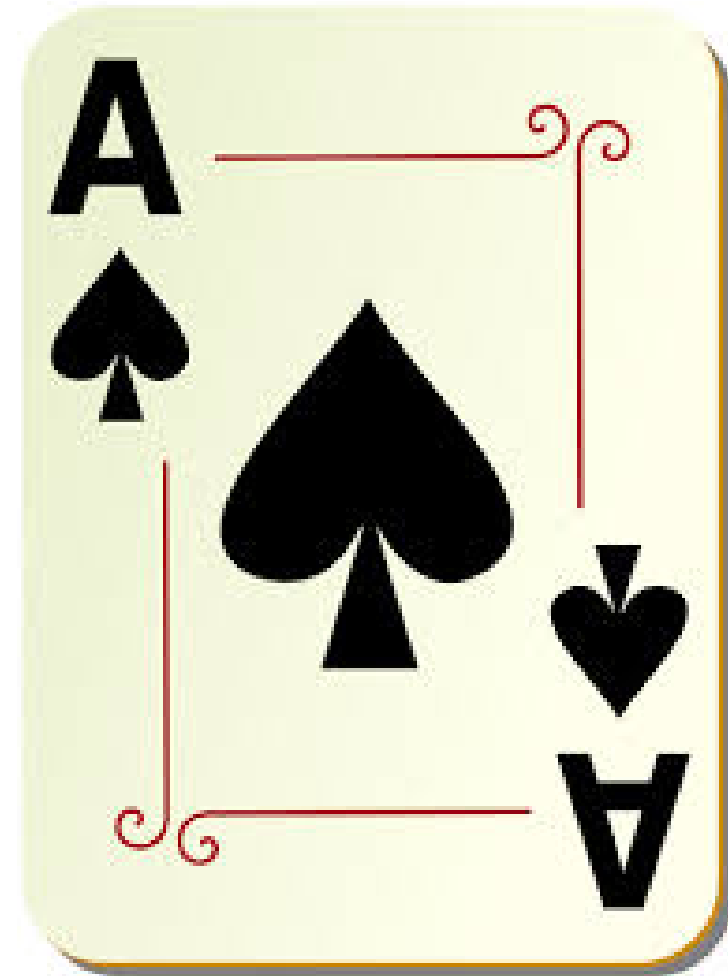


Findings Evaluation: Game Problems

Game Feature	Ease of implementation	Cost of development	Likelihood of challenging behaviours	Total score
Introduce additional issues into the game	3	4	3	36
Introduce a natural disaster or tragic circumstance	2	5	3	30
External agency intervention	3	3	3	27

Prioritising improvements

- Highest scoring potential interventions:
 - ✓ Intervention cards to drive collaboration
 - ✓ Introduce additional issues into the game
 - ✓ Provide more background information
- Next steps – design and test
 - ✓ Additional interventions – use players suggestions e.g. external agency
 - ✓ Location storyboard – present as part of introduction
- Pursue opportunities to digitise SSG



Conclusion

- SSG is valued by students as edutainment
- Additional interventions and logistics changes can challenge players' approach to sustainability throughout SSG
 - Encourage collaboration and cooperation
 - Challenge business decision making



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